Title: **Retinoscopy/Autorefraction, which is the best starting point for a non-cycloplegic refraction?**

Running Title: Retinoscopy vs. Autorefraction

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ABSTRACT

Purpose: The aim of this study was to estimate the agreement between an autorefractor (Nidek ARK 700A) and retinoscopy with subjective refraction.

Methods: Measurements of autorefraction obtained with the ARK700A and retinoscopy were performed on 192 right eyes from 192 healthy young adults and compared with subjective refraction. These measurements were performed without cycloplegia. The age range was 18-34 years, with a mean value of 21.6 years and a standard deviation (SD) of 2.66 years.

Results: A comparison of the autorefractor and subjective refraction results shows that; (1) for the mean spherical equivalent (M) the autorefractor yields more negative values (–0.44 ± 0.54 D, p = 0.000); (2) for the Jackson cross-cylinder at axis 0º (J_0), the autorefractor yields more positive values than the subjective ones (–0.05 ± 0.13 D, p = 0.000); (3) and for the Jackson cross-cylinder at axis 45º (J_{45}), the autorefractor results are more negative (–0.02 ± 0.09 D, p = 0.019). The differences found for each component M, J_0 e J_{45} are statistically significant.

By comparing retinoscopy with the subjective exam, there are no statistically significant differences found for the M component, (–0.02 ± 0.33 D, p = 0.304). For the J_0 and J_{45} components, the differences are statistically significant (–0.07 ± 0.10 D, p = 0.000;–0.01 ± 0.08 D, p = 0.008).

Conclusions: the present results confirm that when performed by an experienced clinician, retinoscopy is more accurate than automatic refraction giving a better starting point to non-cycloplegic refraction.